M2N-MX

Motherboard

E2719

First Edition V1
August 2006

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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

*   This device may not cause harmful interference, and
*   This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

*   Reorient or relocate the receiving antenna.
*   Increase the separation between the equipment and receiver.
*   Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
*   Consult the dealer or an experienced radio/TV technician for help.

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

M2N-MX specifications summary

CPU	Support AMD socket AM2 for AMD Athlon™ 64/ Athlon™ FX/Athlon™ X2/Sempron processors AMD64 architecture enables simultaneous 32-bit and 64-bit computing Supports AMD Cool 'n' Quiet™ Technology
Chipset	NVIDIA® nForce 430/GeForce6100
Front Side Bus	2000/1600 MT/s
Memory	Dual-channel memory architecture 4 x 240-pin DIMM sockets support up to 4 GB of unbufferred/non-ECC 800/667/533 MHz DDR2 memory modules
Expansion slots	1 x PCI Express™ x16 slot 1 x PCI Express™ x1 slot 2 x PCI slots
Graphics	Integrated in the NVIDIA® GeForce™ 6100 Graphics Processing Unit (GPU) High definition video processing with maximum resolution of 1920 x 1440 x 32bpp pixels (@75Hz)
Storage	NVIDIA® nForce™430 media and communications processor (MCP) supports: - 1 x Ultra DMA 133/100 interfaces for two (2) hard disk drives - 4 x Serial ATA 3 Gb/s hard disk drives Supports RAID 0, RAID 1, RAID 0+1, RAID 5, JBOD
High Definition Audio	SoundMAX® ADI AD1986A 6 channels CODEC Supports Jack-Sensing & Enumeration technology S/PDIF OUT interface
LAN	ATTANSIC Gigabit LAN PHY
USB	Supports up to 10 USB 2.0/1.1 ports

M2N-MX specifications summary

Special features	ASUS Q-Fan ASUS C.P.R. (CPU Parameter Recall) ASUS CrashFree BIOS 2 ASUS EZ Flash ASUS MyLogo2™ Stepless Frequency Selection (SFS) allows FSB tuning 　　from 200 MHz to 230 MHz at 1 MHz increment Note:　ASUS CrashFree BIOS 2 and ASUS EZ Flash 2 only 　　　support VGA/RGB output.
BIOS features	4 Mb Flash ROM, Award BIOS,Green, PnP, DMI, Wfm2.0, ACPI v 2.0a, SM BIOS v 2.3
Rear panel	1 x Parallel port 1 x LAN (RJ-45) port 4 x USB 2.0 ports 1 x VGA port 1 x COM1 port 1 x PS/2 keyboard port 1 x PS/2 mouse port 6-channel audio ports
Internal Connector	1 x 10-pin Azalia Analog Front panel connector 1 x CD audio in connector 1 x CPU fan connector 1 x Chassis fan connectors 1 x Floppy disk drive connector 1 x S/PDIF Out connector 1 x PRI_IDE connectors 4 x Serial ATA connectors 3 x USB 2.0 connectors for 6 additional USB 2.0 ports 1 x 24-pin ATX power connector 1 x 4-pin x ATX 12V power connector 1 x System panel connector
Power Requirement	ATX power supply (with 24-pin and 4-pin 12 V plugs) ATX 12 V 2.0 compliant
Form Factor	uATX: 9.6 in. x 8.8 in.
Support CD contents	Device drivers ASUS PC Probe II AMD Cool 'n'Quiet™ utility ASUS Live Update utility Anti-virus software (OEM version)

*Specifications are subject to change without notice.

This chapter describes the motherboard features and the new technologies it supports.

Product introduction

1

1.1 Welcome!

Thank you for buying an ASUS® M2N-MX motherboard!

The motherboard delivers a host of new features and latest technologies, making it another standout in the long line of ASUS quality motherboards!

Before you start installing the motherboard, and hardware devices on it, check the items in your package with the list below.

1.2 Package contents

Check your motherboard package for the following items.

Motherboard	ASUS M2N-MX motherboard
Cables	1 x Serial ATA signal cables 1 x Serial ATA power cable 1 x Ultra DMA 133/100/66 cable 1 x Floppy disk drive cable
Accessories	I/O shield
Application CD	ASUS motherboard support CD
Documentation	User guide

If any of the above items is damaged or missing, contact your retailer.

1.3 Special features

1.3.1 Product highlights

Latest processor technology

The motherboard supports AMD socket AM2 single-core Athlon 64/ Sempron and dual-core Athlon 64 X2/Athlon 64 FX processors with 2MB/1MB/512KB L2 cache, which is based on 64-bit architecture. It features 2000/1600 MT/s HyperTransport Bus, dual-channel un-buffered DDR2 800 memory support and AMD Cool 'n' Quiet Technology. See page 1-9 for details.

AMD Cool 'n' Quiet Technology

The motherboard supports the AMD Cool 'n' Quiet Technology, which monitors system operation and automatically adjusts CPU voltage and frequency for a cool and quiet operating environment.

NVIDIA® GeForce™ 6100 GPU and NVIDIA® nForce™ 430 MCP chipsets

The NVIDIA® GeForce™ 6100 graphics processing unit (GPU) Northbridge supports Microsoft® DirectX 9.0 Shader Model 3.0, and PCI Express interface.

The NVIDIA® nForce™ 430 media and communications processor (MCP) Southbridge delivers NVIDIA® Gigabit and NVIDIA® MediaShield storage management technology allowing easy RAID configuration (RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD) for Serial ATA 3Gb/s.

DDR2 memory support

The motherboard supports DDR2 memory which features data transfer rates of 800MHz/667 MHz/533 MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications. The dual-channel DDR2 architecture doubles the bandwidth of your system memory to boost system performance, eliminating bottlenecks with peak bandwidths of up to 12.8 GB/s. See pages 1-13 to 1-16 for details.

PCI Express™ interface

The motherboard fully supports PCI Express, the latest I/O interconnect technology that speeds up the PCI bus. PCI Express features point-to-point serial interconnections between devices and allows higher clockspeeds by carrying data in packets. This high speed interface is software compatible with existing PCI specifications. See page 1-20 for details.

Serial ATA 3Gb/s technology

The motherboard supports next-generation SATA hard drives based on the new SATA 3Gb/s storage specification. The onboard NVIDIA® nForce 430 MCP southbridge allows RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD configurations for four SATA connectors.

Gigabit LAN solution

Gb LAN controller delivers transfer speeds up to ten times faster than conventional 10/100 Ethernet connections. Gigabit LAN is the networking standard for the early future and is ideal for handling large amounts of data such as video, audio, and voice.

USB 2.0 technology

The motherboard implements the Universal Serial Bus (USB) 2.0 specification, dramatically increasing the connection speed from the 12 Mbps bandwidth on USB 1.1 to a fast 480 Mbps on USB 2.0. USB 2.0 is backward compatible with USB 1.1. See pages 1-28 for details.

High Definition Audio

SoundMAX is the highest performing, most reliable and user-friendly PC audio solution for business professionals, audiophiles, musicians, and gamers. Hear crystal-clear quality from all your audio - MP3 playback, home theatre, advanced gaming, VOIP and more, and never worry - SoundMAX high-definition audio is there to enhance your experience!

1.3.2 Innovative ASUS features

ASUS CrashFree BIOS 2

This feature allows you to restore the original BIOS data from the support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement BIOS chip. See page 2-6 for details.

ASUS EZ Flash 2

With the ASUS EZ Flash, you can easily update the system BIOS even before loading the operating system. No need to use a DOS-based utility or boot from a floppy disk. See page 2-3 for details.

ASUS Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the fan speeds according to the system loading to ensure quiet, cool, and efficient operation. See page 2-31 for details.

C.P.R. (CPU Parameter Recall)

The C.P.R. feature of the motherboard BIOS allows automatic re-setting to the BIOS default settings in case the system hangs due to overclocking. When the system hangs due to overclocking, C.P.R. eliminates the need to open the system chassis and clear the RTC data. Simply shut down and reboot the system, and the BIOS automatically restores the CPU default setting for each parameter.

ASUS MyLogo2™

This feature allows you to personalize and add style to your system with customizable boot logos.

1.4　Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Unplug the power cord from the wall socket before touching any component.

- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity

- Hold components by the edges to avoid touching the ICs on them.

- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LED

The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.

SB_PWR

ON
Standby
Power

OFF
Powered
Off

M2N-MX Onboard LED
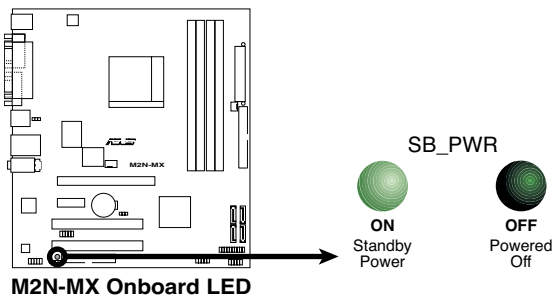
1.5 Motherboard overview

1.5.1 Motherboard layout
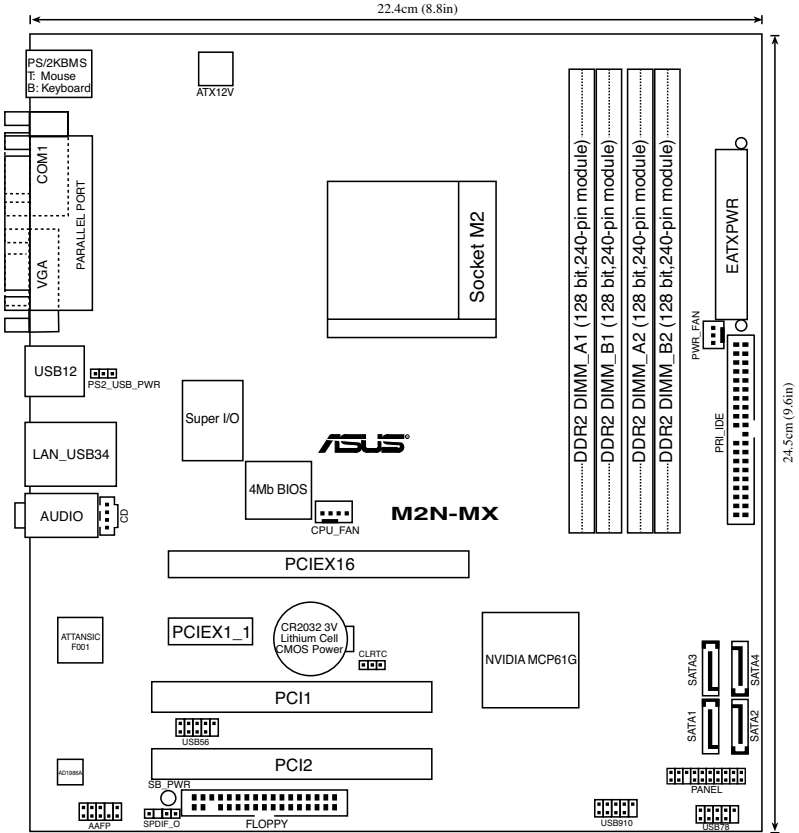
1.5.2 Placement direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.5.3 Screw holes

Place six (6) screws into the holes indicated by circles to secure the motherboard to the chassis.

⚠ Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis

M2N-MX
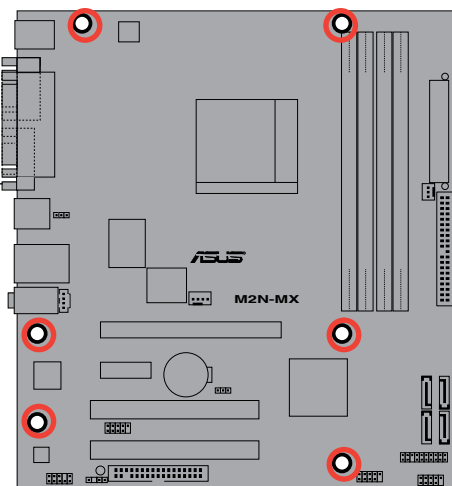
1.6   Central Processing Unit (CPU)

The motherboard comes with a 940-pin AM2 socket designed for the AMD Athlon™ 64 X2/Athlon™ 64/Athlon™ FX/Sempron™ processor.

> ⚠️ The AM2 socket has a different pinout from the 940-pin socket designed for the AMD Opteron™ processor. Make sure you use a CPU is designed for the AM2 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

1.6.1 Installing the CPU

To install a CPU.

1.   Locate the CPU socket on the motherboard.

M2N-MX CPU Socket M2
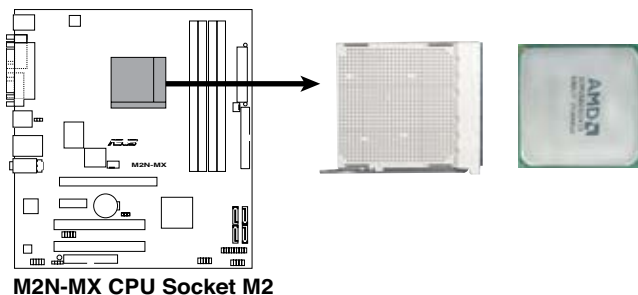
2.   Unlock the socket by pressing the lever sideways, then lift it up to a 90°-100° angle.

Socket lever   ———

> ✍️ Make sure that the socket lever is lifted up to 90°-100° angle, otherwise the CPU does not fit in completely.

3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.

4. Carefully insert the CPU into the socket until it fits in place.

Small t

Gold triangle
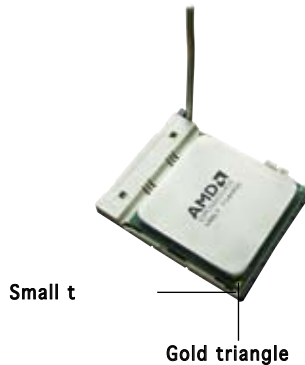
The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!

5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.

6. Install a CPU heatsink and fan following the instructions that came with the heatsink package.

7. Connect the CPU fan cable to the CPU_FAN connector on the motherboard.

PWR_FAN

Rotation
+12V
GND

CPU_FAN

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM

M2N-MX Fan Connectors
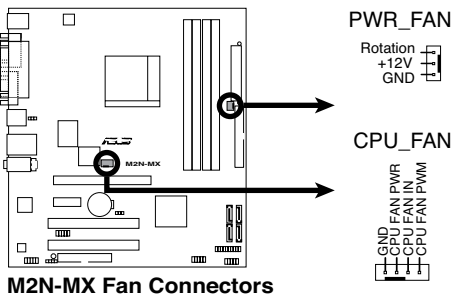
Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

1.6.2 Installing the heatsink and fan

The AMD Athlon™ 64 X2/Athlon™ 64/Athlon™ FX/Sempron™ processor require a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

Make sure that you use only qualified heatsink and fan assembly.

Follow these steps to install the CPU heatsink and fan.

1. Place the heatsink on top of the installed CPU, making sure that the heatsink fits properly on the retention module base.

    *   The retention module base is already installed on the motherboard upon purchase.

    *   You do not have to remove the retention module base when installing the CPU or installing other motherboard components.

    *   If you purchased a separate CPU heatsink and fan assembly, make sure that a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.

CPU Fan

CPU Heatsink

Retention Module Base

Retention bracket   Retention bracket lock
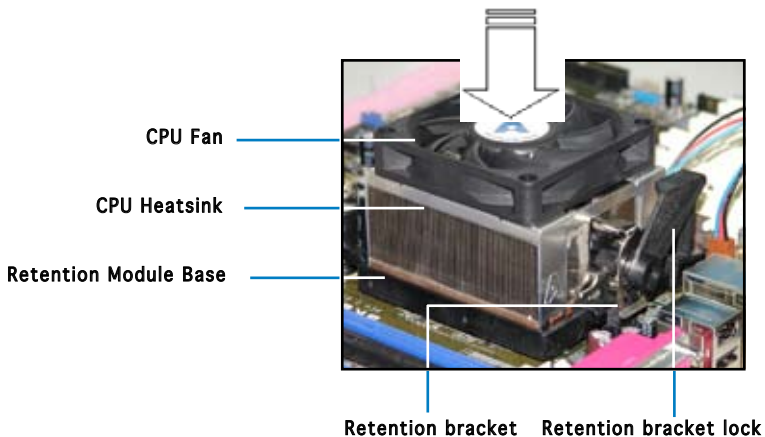
Your boxed CPU heatsink and fan assembly should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

2.	Attach one end of the retention bracket to the retention module base.
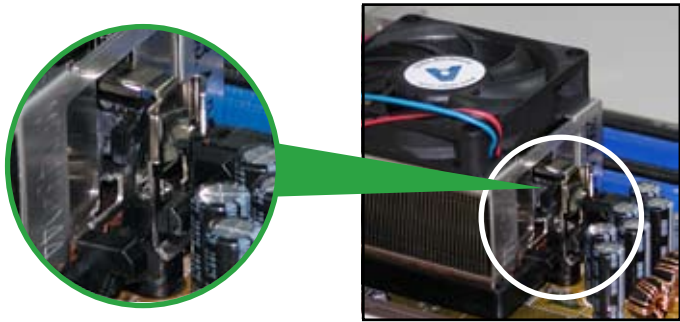
3.	Align the other end of the retention bracket (near the retention bracket lock) to the retention module base. A clicking sound denotes that the retention bracket is in place.

Make sure that the fan and heatsink assembly perfectly fits the retention mechanism module base; otherwise, you cannot snap the retention bracket in place.

4.	Push down the retention bracket lock on the retention mechanism to secure the heatsink and fan to the module base.
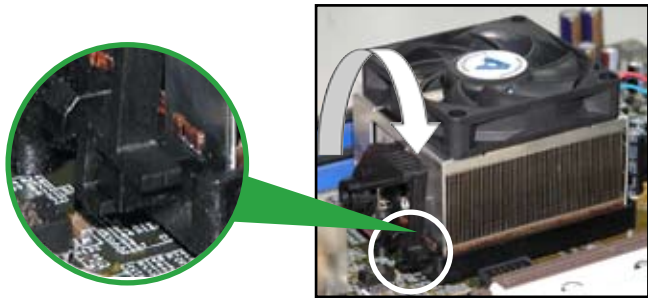
1.7 System memory

1.7.1 Overview

The motherboard comes with four Double Data Rate 2 (DDR2) Dual Inline Memory Modules (DIMM) sockets.

A DDR2 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 184-pin DDR DIMM. DDR2 DIMMs are notched differently to prevent installation on a DDR DIMM socket.

The figure illustrates the location of the DDR2 DIMM sockets:

M2N-MX 240-pin DDR2 DIMM Sockets

Channel	Sockets
Channel A	DIMM_A1 and DIMM_A2
Channel B	DIMM_B1 and DIMM_B2
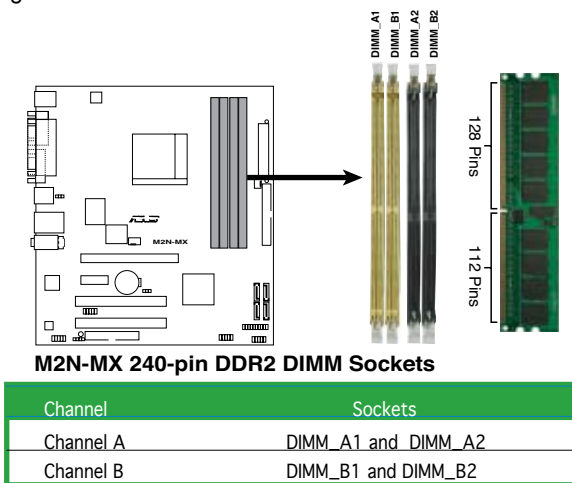
1.7.2 Memory configurations

You may install 256 MB, 512 MB, 1 GB, and 2 GB unbuffered/non-ECC DDR2 DIMMs into the DIMM sockets.

Recommended Memory Configurations

Mode	Sockets			
	DIMM_A1	DIMM_A2	DIMM_B1	DIMM_B2
Single Channel	Populated	-	-	-
	-	Populated	-	-
	-	-	Populated	-
	-	-	-	Populated
Dual-channel (1)	Populated	-	Populated	-
	-	Populated	-	Populated
Dual-channel (2)	Populated	Populated	Populated	Populated

Important notice on installing Windows® XP 32-bit version

If you install Windows® XP 32-bit version Operating System (OS), the limitation of this OS version is that it may reserve a certain amount of memory space for system devices. We recommend that you install less than 3 GB system memory if you would like to work under Windows® XP 32-bit version OS. The excess memory installation will not cause any usage problem, but it will not give users the benefit of manipulating this excess memory space.

Visit the ASUS FAQ site for further explanation:
http://support.asus.com/faq/faq.aspx?SLanguage=en-us
Under General Search, make the selections as shown, then click Search. Click the article titled "4GB memory installed but less memory size detected."
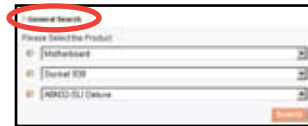
You also may check the URLs below for third party comments on this issue:
http://dlsvr01.asus.com/pub/ASUS/mb/4GB_Rev1.pdf
http://www.intel.com/support/motherboards/server/sb/cs-016594.htm

32-bit	64-bit
Windows® 2000 Advanced Server Windows® Server 2003 Enterprise Edition	Windows® Server 2003 Standard x64 Edition Windows® XP Professtional x64 Edition Windows® Server 2003 Enterprise x64 Edition

1.7.3   Installing a DIMM

> Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Unlock a DIMM socket by pressing the retaining clips outward.

2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.
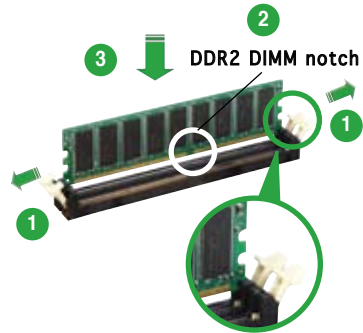
DDR2 DIMM notch

Unlocked retaining clip

> • A DDR2 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.
> • The DDR2 DIMM sockets do not support DDR DIMMs. Do not install DDR DIMMs to the DDR2 DIMM sockets.

1.7.4   Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.

DDR2 DIMM notch
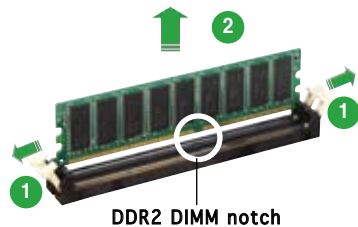
> Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

1.8   Expansion slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

> Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1.8.1   Installing an expansion card

To install an expansion card:

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

1.8.2   Configuring an expansion card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

Standard interrupt assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	–	Re-direct to IRQ#9
3	11	IRQ holder for PCI steering*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT1)*
8	3	System CMOS/Real Time Clock
9	4	IRQ holder for PCI steering*
10	5	IRQ holder for PCI steering*
11	6	IRQ holder for PCI steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

IRQ assignments for this motherboard

	A	B	C	D
PCI slot 1	used	—	—	—
PCI slot 2	—	used	—	—

When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments; otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

1.8.3   PCI slots

The PCI slots support cards such as
a LAN card, SCSI card, USB card, and
other cards that comply with PCI
specifications. The figure shows a
LAN card installed on a PCI slot.
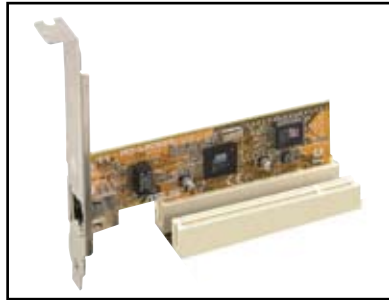
1.8.4   PCI Express x1 slot

This motherboard supports PCI
Express x1 network cards, SCSI
cards and other cards that comply
with the PCI Express specifications.
The following figure shows a network
card installed on the PCI Express x1
slot.

1.8.5   PCI Express x16 slot

This motherboard has supports
PCI Express x16 graphic cards
that comply with PCI Express
specifications. The figure shows a
graphics card installed on the PCI
Express x16 slot.

1.9 Jumpers

1. **Clear RTC RAM (CLRTC)**

   This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

   To erase the RTC RAM:

   1. Turn OFF the computer and unplug the power cord.
   2. Remove the onboard battery.
   3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
   4. Reinstall the battery.
   5. Plug the power cord and turn ON the computer.
   6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

   > Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

   M2N-MX Clear RTC RAM

   CLRTC

   1 2   Normal (Default)   2 3   Clear RTC
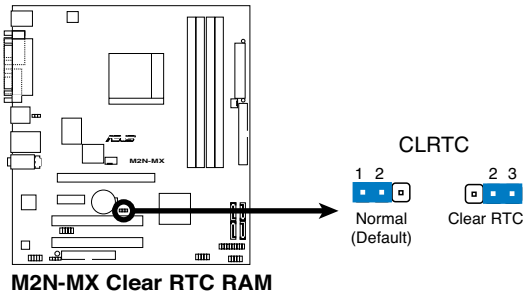
   > You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

2. USB device wake-up (3-pin PS2_USB_PWR)

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 500 mA on the +5VSB lead, and a corresponding setting in the BIOS.

PS2_USB_PWR

1 2   2 3

+5V   +5VSB
(Default)

M2N-MX USB Device Wake Up
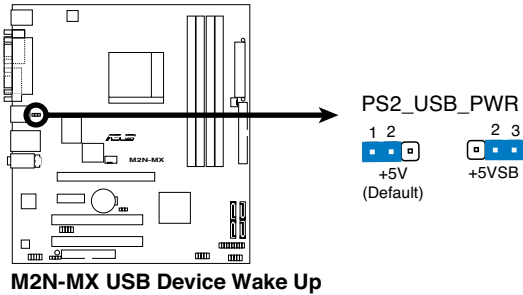
1.10 Connectors

1.10.1 Rear panel connectors
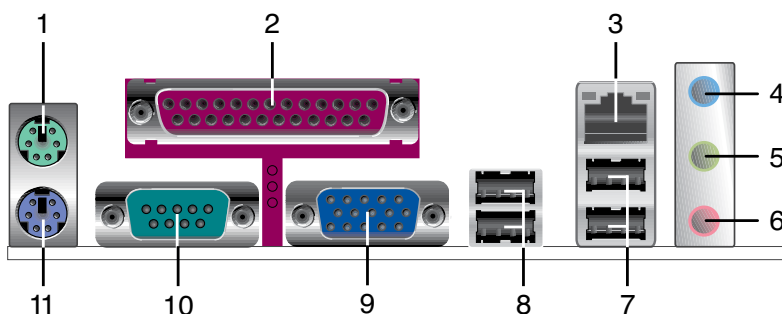
1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub.

LAN port LED indications

ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
Orange	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

ACT/LINK   SPEED LED

LAN port
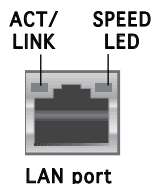
4. **Line In port (light blue).** This port connects a tape, CD, DVD player, or other audio sources.
5. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel/ 6-channel configuration, the function of this port becomes Front Speaker Out.
6. **Microphone port (pink).** This port connects a microphone.

Refer to the audio configuration table for the function of the audio ports in 2, 4, or 6,-channel configuration.

Audio 2, 4, or 6-channel configuration

Port	Headset 2-speaker	4-speaker	6-speaker
Light Blue	Line In	Surround Out	Surround Out
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic	Center/Bass

7. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

8. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

9. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.

10. **COM port.** This port is for pointing devices or other serial devices.

11. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

1.10.2 Internal connectors

1.   Floppy disk drive connector (34-1 pin FLOPPY)

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

> Pin 5 on the connector is removed to prevent incorrect cable connection when using an FDD cable with a covered Pin 5.

FLOPPY

PIN 1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

M2N-MX Floppy Disk Drive Connector
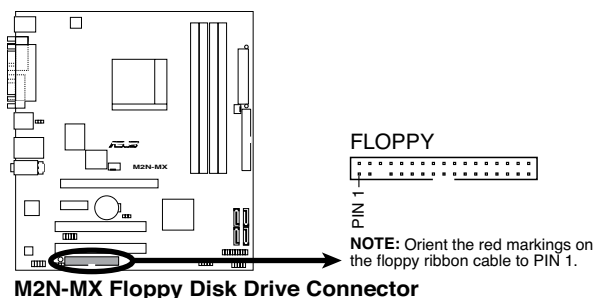
2. IDE connectors (40-1 pin PRI_IDE)

The onboard IDE connectors are for Ultra DMA 133/100/66 signal cable(s). There are three connectors on each Ultra DMA 133/100/66 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device(s).

	Drive jumper setting	Mode of device(s)	Cable connector
Single device	Cable-Select or Master	-	Black
Two devices	Cable-Select	Master	Black
		Slave	Gray
	Master	Master	Black or gray
	Slave	Slave	

• Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.

• Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices.

If any device jumper is set as "Cable-Select," make sure all other device jumpers have the same setting.

PRI_IDE

PIN1

NOTE: Orient the red markings (usually zigzag) on the ID ribbon cable to PIN 1.

M2N-MX IDE Connector
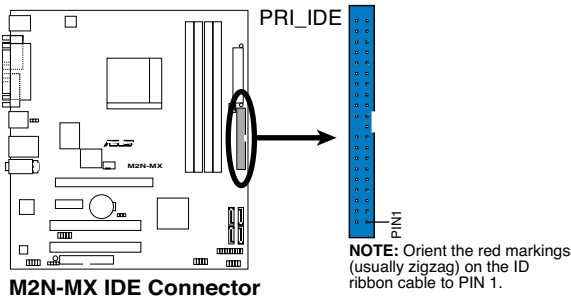
3. Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4)

These connectors are for the Serial ATA signal cables for Serial ATA 3.0 Gb/s hard disk and optical disk drives. The Serial ATA 3 Gb/s is backward compatible with Serial ATA 1.5Gb/s specification.

The current Serial ATA I interface allows up to 150 MB/s data transfer rate while Serial ATA II allows up to 300 MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (Ultra DMA133).

If you install Serial ATA hard disk drives, you can create a RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD configuration through the onboard NVIDIA® MediaShield™ controller.

M2N-MX SATA Connectors
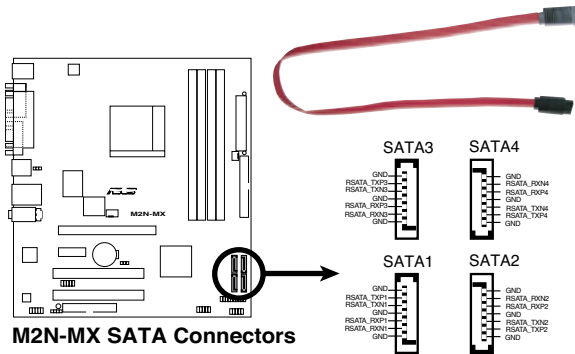
Important note on Serial ATA

Install the Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA.

- For detailed instructions on how to configure RAID 0, 1, 0+1, 5,and JBOD, refer to the RAID manual in the support CD.

- The RAID function of these connectors is set to [Disabled] by default. If you intend to create a Serial ATA RAID set using these connectors, enable the RAID Enabled item in the NVRAID Configuration sub-menu in the BIOS. See section "2.4.3 Onboard Device Configuration" for details.

4. CPU, Chassis, and Power Fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN1)

The fan connectors support cooling fans of 350mA~740mA (8.88W max.) or a total of 1A~2.22A (26.64W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.

Only CPU Fan connector supports Q-Fan function.

CPU_FAN

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM
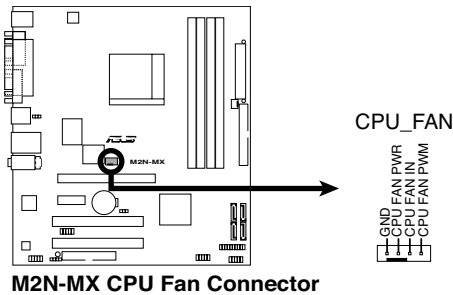
M2N-MX CPU Fan Connector

5. Digital audio connector (4-1 pin SPDIF_OUT)

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF module cable to this connector, then install the module to a slot opening at the back of the system chassis.

The S/PDIF module is purchased separately.

+5V
SPDIFOUT
GND

SPDIF_O
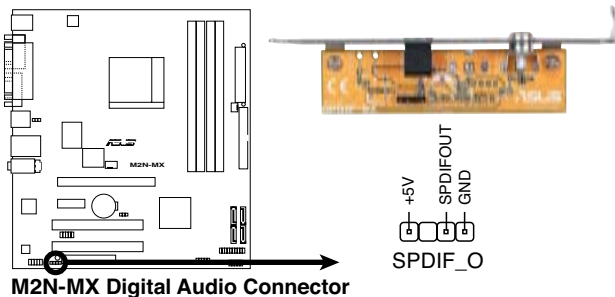
M2N-MX Digital Audio Connector

6. USB connectors (10-1 pin USB56, USB78, USB 910)

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.

USB56

USB910   USB78

M2N-MX USB 2.0 Connectors
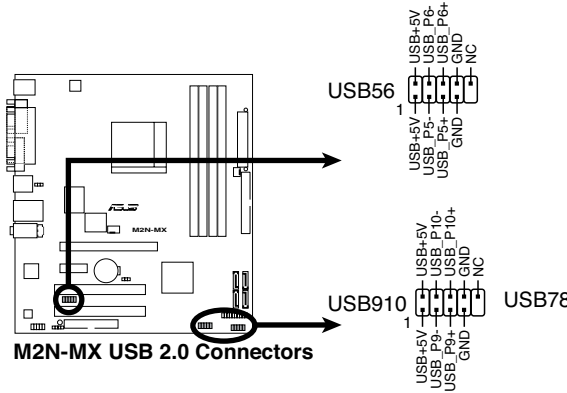
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

The USB 2.0 module is purchased separately.

7. Optical drive audio in connector (4-pin CD)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.

CD
(black)

Right Audio Channel
Ground
Ground
Left Audio Channel

M2N-MX Internal Audio Connector
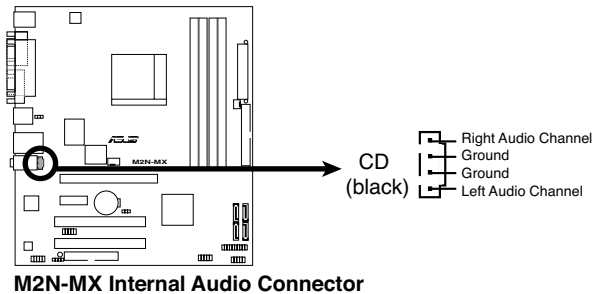
8. Front panel audio connector (10-1 pin AAFP)

This connector is for a chassis-mounted front panel audio I/O module that supports either High Definition Audio or AC`97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.

M2N-MX Azalia Analog Front Panel Connector
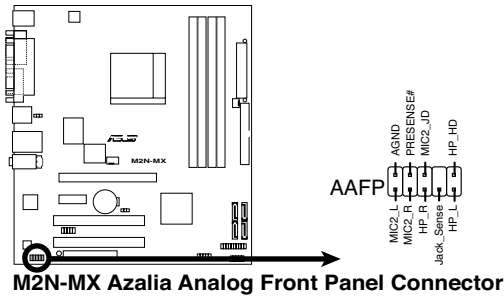
> • We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard high-definition audio capability.
>
> • If you want to connect a high-definition front panel audio module to this connector, make sure that the HD Audio item in the BIOS is set to [Enabled].

9. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

These connectors are for an ATX power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

- We recommend that you use an ATX 12 V Specification 2.0-compliant power supply unit (PSU) with a minimum of 300 W power rating. This PSU type has 24-pin and 4-pin power plugs.

- If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15 A on +12 V and that the PSU has a minimum power rating of 300 W. The system may become unstable or may not boot up if the power is inadequate.

- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.

- We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

- You must install a PSU with a higher power rating if you intend to install additional devices.

EATX12V

+12V DC — +12V DC
GND — GND

EATXPWR

+3 Volts	Ground
+12 Volts	+5 Volts
+12 Volts	+5 Volts
+5V Standby	+5 Volts
Power OK	-5 Volts
Ground	Ground
+5 Volts	Ground
Ground	Ground
+5 Volts	PSON#
Ground	Ground
+3 Volts	-12 Volts
+3 Volts	+3 Volts

M2N-MX ATX Power Connector
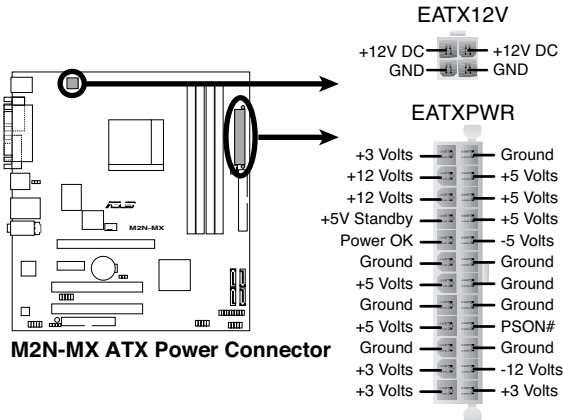
10. System panel connector (20-1 pin PANEL)

This connector supports several chassis-mounted functions.

M2N-MX System Panel Connector
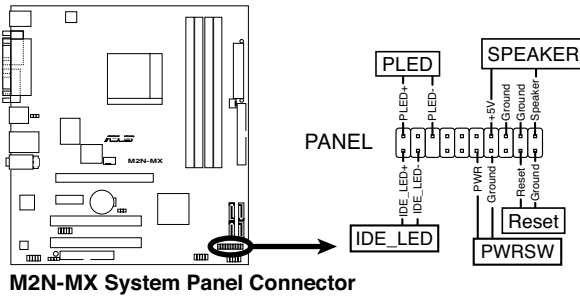
- **System power LED**
  This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED**
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **System warning speaker**
  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **Power/Soft-off button**
  This connector is for the system power button. Pressing the power button turns the system ON or puts the system in SLEEP or SOFT-OFF mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button**
  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

BIOS setup

2

2.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup.

1. ASUS EZ Flash (Updates the BIOS in DOS mode using a floppy disk or the motherboard support CD.)
2. ASUS AFUDOS (Updates the BIOS in DOS mode using a bootable floppy disk.)
3. ASUS CrashFree BIOS 2 (Updates the BIOS using a bootable floppy disk, or the motherboard support CD when the BIOS file fails or gets corrupted.)
4. ASUS Update (Updates the BIOS in Windows® environment.)

Refer to the corresponding sections for details on these utilities.

Save a copy of the original motherboard BIOS file to a bootable floppy disk or a USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

2.1.1 Creating a bootable floppy disk

1. Do either one of the following to create a bootable floppy disk.
   DOS environment
   a. Insert a 1.44MB floppy disk into the drive.
   b. At the DOS prompt, type `format` `A:/s` then press <Enter>.
   Windows® XP environment
   a. Insert a 1.44 MB floppy disk to the floppy disk drive.
   b. Click Start from the Windows® desktop, then select My Computer.
   c. Select the 3 1/2 Floppy Drive icon.
   d. Click File from the menu, then select Format. A Format 3 1/2 Floppy Disk window appears.
   e. Select Create an MS-DOS startup disk from the format options field, then click Start**.**
   Windows® 2000 environment
   To create a set of boot disks for Windows® 2000:
   a. Insert a formatted, high density 1.44 MB floppy disk into the drive.
   b. Insert the Windows® 2000 CD to the optical drive.
   c. Click Start, then select Run.
   d. From the Open field, type

   D:\bootdisk\makeboot a:

   assuming that D: is your optical drive.
   e. Press <Enter>, then follow screen instructions to continue.

2. Copy the original or the latest motherboard BIOS file to the bootable floppy disk.

2.1.2 ASUS EZ Flash utility

The ASUS EZ Flash feature allows you to update the BIOS without having to go through the long process of booting from a floppy disk and using a DOS-based utility. The EZ Flash utility is built-in the BIOS chip so it is accessible by pressing <Alt> + <F2> during the Power-On Self Tests (POST).

To update the BIOS using EZ Flash:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard and rename the same to M2N-MX.ROM.

2. Save the BIOS file to a floppy disk, then restart the system.

3. Press <Alt> + <F2> during POST to display the following.

```
EZFlash starting BIOS update
Checking for floppy...
```

4. Insert the floppy disk that contains the BIOS file to the floppy disk drive. When the correct BIOS file is found, EZ Flash performs the BIOS update process and automatically reboots the system when done.

```
EZFlash starting BIOS update
Checking for floppy...
Floppy found!
Reading file "M2N-MX.rom". Completed.
Start erasing.......|
Start programming...|
Flashed successfully. Rebooting.
```

• Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

• A "Floppy not found!" error message appears if there is no floppy disk in the drive. A "M2N-MX.ROM not found!" error message appears if the correct BIOS file is not found in the floppy disk. Make sure that you rename the BIOS file to M2N-MX.ROM.

2.1.3   AFUDOS utility

The AFUDOS utility allows you to update the BIOS file in DOS environment using a bootable floppy disk with the updated BIOS file. This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.

Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:

> • Make sure that the floppy disk is not write-protected and has at least 1024KB free space to save the file.
>
> • The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be same as shown.

1.   Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

2.   Boot the system in DOS mode, then at the prompt type:

   afudos /o[filename]

   where the [filename] is any user-assigned filename not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name.

```
A:\>afudos /oOLDBIOS1.rom
```

Main filename   **Extension name**

3.   Press <Enter>. The utility copies the current BIOS file to the floppy disk.

```
A:\>afudos /oOLDBIOS1.rom
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
    Reading flash ..... done
    Write to file...... ok
A:\>
```

The utility returns to the DOS prompt after copying the current BIOS file.

Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

1. Visit the ASUS website (www.asus.com) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.

    > Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

3. Boot the system in DOS mode, then at the prompt type:

    afudos /i[filename]

    ```
    A:\>afudos /iM2N-MX.ROM
    ```

4. The utility verifies the file and starts updating the BIOS.

    ```
    A:\>afudos /iM2N-MX.ROM
    AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

        WARNING!! Do not turn off power during flash BIOS
        Reading file ....... done
        Reading flash ...... done

        Advance Check ......
        Erasing flash ...... done
    ```

    > Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

5. The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive.

    ```
    A:\>afudos /iM2N-MX.ROM
    AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

        WARNING!! Do not turn off power during flash BIOS
        Reading file ....... done
        Reading flash ...... done

        Advance Check ......
        Erasing flash ...... done
        Writing flash ...... done
        Verifying flash .... done

        Please restart your computer

    A:\>
    ```

2.1.4 ASUS CrashFree BIOS 2 utility

The ASUS CrashFree BIOS 2 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using the motherboard support CD or the floppy disk that contains the updated BIOS file.

- • Prepare the motherboard support CD, or the floppy disk containing the updated motherboard BIOS before using this utility.

- • Make sure that you rename the original or updated BIOS file in the floppy disk or the USB flash disk to M2N-MX.ROM.

Recovering the BIOS from a floppy disk

To recover the BIOS from a floppy disk:

1. Turn on the system.
2. Insert the floppy disk with the original or updated BIOS file to the floppy disk drive.
3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "M2N-MX.ROM". Completed.
Start flashing...
```

DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4. Restart the system after the utility completes the updating process.

Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1. Remove any floppy disk from the floppy disk drive, then turn on the system.
2. Insert the support CD to the optical drive.
3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When no floppy disk is found, the utility automatically checks the optical drive for the original or updated BIOS file. The utility then updates the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found!
Reading file "M2N-MX.ROM". Completed.
Start flashing...
```

4. Restart the system after the utility completes the updating process.

The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the ASUS website (www.asus.com) to download the latest BIOS file.

2.1.5 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- • Save the current BIOS file
- • Download the latest BIOS file from the Internet
- • Update the BIOS from an updated BIOS file
- • Update the BIOS directly from the Internet, and
- • View the BIOS version information.

This utility is available in the support CD that comes with the motherboard package.

ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

Installing ASUS Update

To install ASUS Update:

1. Place the support CD in the optical drive. The **Drivers** menu appears.
2. Click the Utilities tab, then click Install ASUS Update. See page 5-3 for the Utilities screen menu.
3. The ASUS Update utility is copied to your system.

Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the ASUS Update utility from the Windows® desktop by clicking Start > Programs > ASUS > ASUSUpdate > ASUSUpdate. The ASUS Update main window appears.

2. Select Update BIOS from the Internet option from the drop-down menu, then click Next.

3. Select the ASUS FTP site nearest you to avoid network traffic, or click Auto Select. Click Next.

4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.

5. Follow the screen instructions to complete the update process.

✎ The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.

Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

1. Launch the ASUS Update utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.

2. Select **Update BIOS from a file** option from the drop-down menu, then click **Next**.

3. Locate the BIOS file from the **Open** window, then click **Open**.

4. Follow the screen instructions to complete the update process.
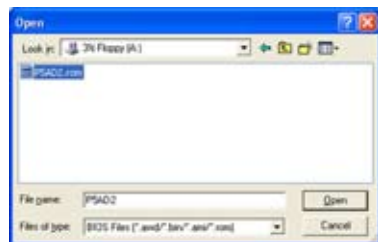
2.2 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section "2.1 Managing and updating your BIOS."

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to"Run Setup." This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the SPI chip.

The firmware chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, reboot the system by doing any of the following procedures:

- **Restart using the OS standard shut-down procedure.**
- **Press <Ctrl>+<Alt>+<Del> simultaneously.**
- **Press the reset button on the system chassis.**
- **Press the power button to turn the system off then back on.**

> Using the **power button**, **reset button**, or the **<Ctrl>+<Alt>+<Del>** keys to force reset from a running operating system can cause damage to your data or system. We recommend to always shut-down the system properly from the operating system.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

> - The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Setup Defaults** item under the Exit Menu. See section "2.8 Exit Menu."
>
> - The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
>
> - Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard.

2.2.1 BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Tools    Exit

    System Time                  [00: 38 : 56]        Use [ENTER], [TAB]
    System Date                  [Tue01/01/2002]      or [SHIFT-TAB] to
    Legacy Diskette A            [1.44M, 3.5in.]      select a field.
                                                      Use [+] or [-] to
                                                      configure system time.
  ▶ IDE Configuration

  ▶ Primary IDE Master          : [Not Detected]
  ▶ Primary IDE Slave           : [Not Detected]      ←→   Select Screen
  ▶ SATA1                       : [Not Detected]      ↑↓   Select Item
  ▶ SATA2                       : [Not Detected]      +-   Change Option
  ▶ SATA3                       : [Not Detected]      F1   General Help
  ▶ SATA4                       : [Not Detected]      F10  Save and Exit
                                                      ESC  Exit

  ▶System information
              v02.58 (C)Copyright 1985-2002, American Megatrends, Inc.
```

Sub-menu items   Navigation keys

2.2.2 Menu bar

The menu bar on top of the screen has the following main items:

Main   For changing the basic system configuration

Advanced   For changing the advanced system settings

Power   For changing the advanced power management (APM)
                  configuration

Boot   For changing the system boot configuration

Tools   For setting EZ Flash 2 and O.C. Profile.

Exit   For selecting the exit options and loading default
                  settings

To select an item on the menu bar, press the right or left arrow key on the
keyboard until the desired item is highlighted.

2.2.3 Navigation keys

At the bottom right corner of a menu screen are the navigation keys for
that particular menu. Use the navigation keys to select items in the menu
and change the settings.

✎ Some of the navigation keys differ from one screen to another.

2.2.4　Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting Main shows the Main menu items.

The other items (Advanced, Power, Boot, Tool, and Exit) on the menu bar have their respective menu items.
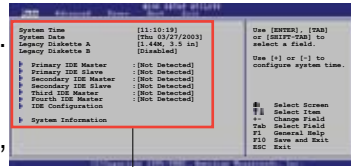
Main menu items

2.2.5　Sub-menu items

A solid triangle before each item on any menu screen means that the iteam has a sub-menu. To display the sub-menu, select the item and press <Enter>.

2.2.6　Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to "4.2.7 Pop-up window."

2.2.7　Pop-up window

Select a menu item then press <Enter> to display a pop-up window with the configuration options for that item.

2.2.8　Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> /<Page Down> keys to display the other items on the screen.
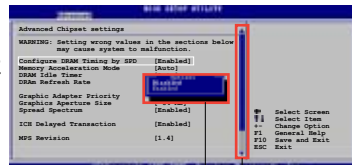
Pop-up window

Scroll bar

2.2.9　General help

At the top right corner of the menu screen is a brief description of the selected item.

2.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information.

Refer to section "2.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                            BIOS SETUP UTILITY
   Main     Advanced    Power    Boot    Tools    Exit

   System Time                  [03:59:16]          Use [ENTER], [TAB]
   System Date                  [Tue 01/08/2002]    or [SHIFT-TAB] to
   Legacy Diskette A            [1.44M, 3.5 in]     select a field.
                                                    Use [+] or [-] to
   ▶  IDE Configuration                             configure system time.

   ▶  Primary IDE Master        :[Not Detected]
   ▶  Primary IDE Slave         :[Not Detected]
   ▶  SATA 1                     :[Not Detected]
   ▶  SATA 2                     :[Not Detected]
   ▶  SATA 3                     :[Not Detected]    ←→    Select Screen
   ▶  SATA 4                     :[Not Detected]    ↑↓    Select Item
                                                    +-    Change Option
   ▶  System Information                            F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit

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```

2.3.1 System Time [xx:xx:xx]

Allows you to set the system time.

2.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

2.3.3 Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

2.3.4 IDE Configuration

The items in this menu allow you to set or change the configurations for the IDE devices installed in the system. Select an item then press <Enter> if you wish to configure the item.

```
                          BIOS SETUP UTILITY
 Main

   IDE Configuration

   Onboard IDE Controller        [Enabled]
   Serial-ATA Devices            [Device 0/1]

   nVidia RAID Function          [Disabled]
```
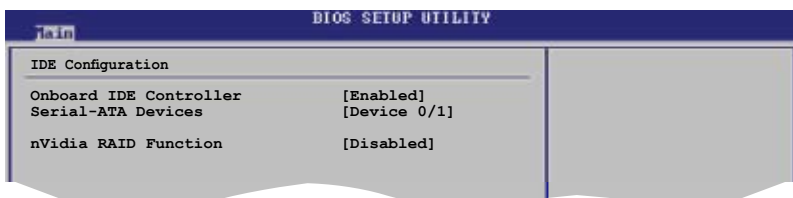
Onboard IDE Controller [Enabled]

Allows you to enable or disable the onboard IDE controller.
Configuration options: [Enabled] [Disabled]

Serial-ATA Devices [Device 0/1]

Allows you to disable or set the Serial-ATA devices.
Configuration options: [Disabled] [Device 0] [Device 0/1]

nVidia RAID Function [Disabled]

Allows you to enable or disable the NVIDIA RAID function.
Configuration options: [Enabled] [Disabled]

2.3.5 Primary IDE Master/Slave

While entering Setup, the BIOS automatically detects the presence of IDE devices. There is a separate sub-menu for each IDE device. Select a device item then press <Enter> to display the IDE device information.

```
                          BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Tools    Exit

    Third IDE Master

    Device       : Not Detected

    Type                          [Auto]
    LBA/Large Mode                [Auto]
    Block(Multi-sector Transfer) M [Auto]
    PIO Mode                      [Auto]
    DMA Mode                      [Auto]
    SMART Monitoring              [Auto]
    32Bit Data Transfer           [Enabled]       ←→   Select Screen
                                                  ↑↓   Select Item
                                                  +-   Change Option
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

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```

The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

2.3.6   SATA1, SATA2, SATA3, and SATA4

While entering Setup, the BIOS automatically detects the presence of SATA devices. There is a separate sub-menu for each SATA device. Select a device item then press <Enter> to display the SATA device information.

```
                          BIOS SETUP UTILITY
 Main    Advanced    Power    Boot    Tools    Exit

   Third IDE Master

   Device      : Not Detected

   LBA/Large Mode                  [Auto]
   Block(Multi-sector Transfer) M  [Auto]
   PIO Mode                        [Auto]
   DMA Mode                        [Auto]
   SMART Monitoring                [Auto]
   32Bit Data Transfer             [Enabled]
                                              ←→    Select Screen
                                              ↑↓    Select Item
                                              +-    Change Option
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

           v00.00 (C)Copyright 1985-2002, American Megatrends, Inc.
```

The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0]
[SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0]
[UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

2.3.7   System Information

This menu gives you an overview of the general system specifications. The
BIOS automatically detects the items in this menu.
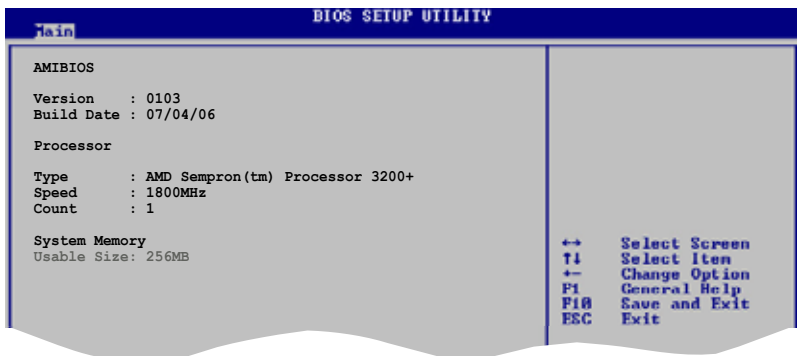
AMI BIOS

Displays the auto-detected BIOS information

Processor

Displays the auto-detected CPU specification

System Memory

Displays the auto-detected system memory

2.4 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

⚠️ Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

```
                       BIOS SETUP UTILITY
  Main    Advanced   Power    Boot    Tools    Exit

 ▶  CPU Configuration
 ▶  Chipset

 ▶  Onboard Devices Configuration
 ▶  PCIPnP
 ▶  USB Configuration

 ▶  Jumperfree Configuration

                                        ↔     Select Screen
                                        ↑↓    Select Item
                                        Enter Go to Sub Screen
                                        F1    General Help
                                        F10   Save and Exit
                                        ESC   Exit

     vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```
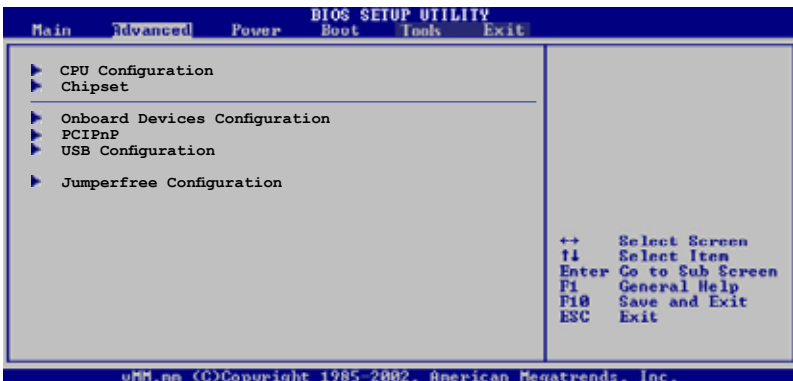
2.4.1 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

```
                       BIOS SETUP UTILITY
  Main    Advanced   Power    Boot    Tools    Exit

  CPU Configuration                       Unlock locked CPU
  Module Version: 13.01                   and let it run at
  AGESA Version: 02.06.07                 lower multiplier
  Physical Count: 1                       setting.
  Logical Count: 1

  AMD Sempron(tm) Processor 3000+
  Revision: F2
  Cache L1: 64KB
  Cache L2: 128KB
  Speed   : 1800MHz
  Current FSB Multiplier: 9x
  Maximum FSB Multiplier: 9x
  Able to Change Freq.  : Yes
  uCode Patch Level     : None Required    ↔     Select Screen
  GART Error Reporting         [Disabled]  ↑↓    Select Item
  MTRR Mapping                 [Continuous] Enter Go to Sub Screen
  Runtime Legacy PSB           [Disabled]  F1    General Help
  ACPI 2.0 Objects             [Enabled]   F10   Save and Exit
                                           ESC   Exit

     vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```

GART Error Reporting [Disabled]

This option should remain disabled for the normal operation. The driver developer may enable it for testing purpose.
Configuration options: [Disabled] [Enabled]

MTRR Mapping [Continuous]

This option determines the method used for programming CPU MTRRs when 4GB or more of memory is present. Discrete leaves the PCI hole below the 4GB boundary undescribed. Continuous explicitly describes the PCI hole as non-caheable. Configuration options: [Continuous] [Discrete]

Runtime Legacy PSB [Disabled]

Enables or disables the generation of Power State Block for use of PowerNow(tm) driver in a single core system.
Configuration options: [Disabled] [Enabled]

ACPI 2.0 Objects [Enabled]

Enables or disables the generation of ACPI_PPC, _PSS, and _PCT objects.
Configuration options: [Disabled] [Enabled]

2.4.2　Chipset

The Chipset menu allows you to change the advanced chipset settings.
Select an item then press <Enter> to display the sub-menu.

```
                         BIOS SETUP UTILITY
        Advanced

    Advanced Chipset Settings

    WARNING: Setting wrong values in below sections
             may cause the system to  malfunction.

    ►    NorthBridge Configuration
    ►    Southbridge
    ►    Hyper Transport Configuration
```

NorthBridge Configuration

```
                         BIOS SETUP UTILITY
        Advanced

    North Bridge chipset Configuration

    Memory Configuration

    Memclock Mode               [Auto]
    MCT Timing Mode             [Auto]
    Enable Clock to ALL DIMMs   [Disabled]
    MemCLK Tristate C3/ATLVID    [Disabled]
    Memory Hole Remapping       [Enabled]

    Power Down Control          [Auto]
                                            ←→   Select Screen
                                            ↑↓   Select Item
                                            +−   Change Option
                                            F1   General Help
```

Configure DRAM Timing by SPD [Enabled]

When this item is enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items. The following sub-items appear when this item is Disabled. Configuration options: [Enabled] [Disabled]

DRAM CAS# Latency [5]
Controls the latency between the SDRAM read command and the time the data actually becomes available. Configuration options: [3] [4] [5] [6]

DRAM RAS# to CAS# Delay [6 DRAM Clocks]
Controls the latency between the DDR SDRAM active command and the read/write command. Configuration options: [2 DRAM Clocks] [3 DRAM Clocks] [4 DRAM Clocks] [5 DRAM Clocks] [6 DRAM Clocks]

DRAM RAS# Precharge [6 DRAM Clocks]
Controls the idle clocks after issuing a precharge command to the DDR SDRAM. Configuration options: [2 DRAM Clocks] [3 DRAM Clocks] [4 DRAM Clocks] [5 DRAM Clocks] [6 DRAM Clocks]

DRAM RAS# Activate to Precha [15 DRAM Clocks]
Configuration options: [4 DRAM Clocks] [5 DRAM Clocks]...[18 DRAM Clocks]

DRAM Write Recovery Time [4 Clocks]
Set the write recovery timing.

DRAM TRFC [30 DRAM Clocks]
Configuration options: [20 DRAM Clocks] [25 DRAM Clocks] [30 DRAM Clocks] [35 DRAM Clocks] [42 DRAM Clocks]

DRAM TRRD [10]
Configuration options: [10]

Initiate Graphic Adapter [PEG/PCI]

Allows you to select the graphics controller as the primary boot device. Configuration options: [PCI/PEG] [PEG/PCI]

Initiate Graphic Mode Select [Enabled, 8MB]

Allows you to select the amount of system memory used by the Internal graphics device. Configuration options: [Disabled] [Enabled,1MB] [Enabled, 8MB]

PEG Force x1 [Disabled]
Configuration options: [Enabled] [Disabled]

SouthBridge Configuration

```
                          BIOS SETUP UTILITY
            Advanced

      SouthBridge MCP61 chipset Configuration


      Primary Graphics Adapter        [PCIE-> PCI -> IGP]
      AZALIA Audio                    [Auto]
      OnBoard LAN                     [Auto]
      OnBoard LAN Boot ROM            [Disabled]




                                              ←→    Select Screen
                                              ↑↓    Select Item
                                              +-    Change Option
                                              F1    General Help
```
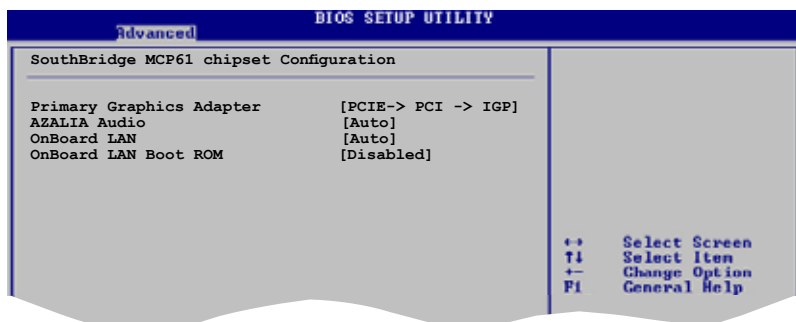
Primary Graphics Adapter [PCIE-> PCI -> IGP]

Display Device Priority, from high to low.
Configuration options: [PCIE-> PCI-> IGP] [IGP ->PCI -> PCIE]

AZALIA AUDIO [Auto]

Allows you to set or disable the AZALIA AUDIO.
Configuration options: [Auto] [Disabled]

OnBoard LAN [Auto]

Allows you to set or disable the OnBoard LAN.
Configuration options: [Auto] [Disabled]

OnBoard LAN Boot ROM [Disabled]

Allows you to enable or disable the OnBoard LAN Boot ROM.
Configuration options: [Enabled] [Disabled]

Hyper Transport Configuration

```
                          BIOS SETUP UTILITY
            Advanced

      SouthBridge MCP61 chipset Configuration


      MCP61(SB) to K8(CPU) Freq Auto   [Disabled]
      MCP61(SB) to K8(CPU) Frequency   [1000 MHz]
      MCP61(SB) to K8(CPU) Linkwidth   [16 16]
```

2.4.3 Onboard Devices Configuration
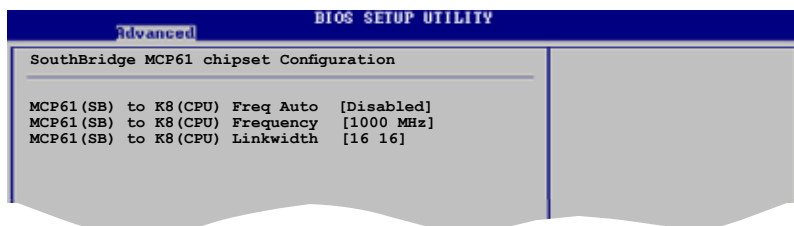
```
                        BIOS SETUP UTILITY
        Advanced

Configure ITE8712 Super IO Chipset

Serial Port1 Address           [3F8/IRQ4]
Parallel Port Address          [378]
Parallel Port Mode             [Normal]
  Parallel Port IRQ            [IRQ7]



                                            →←     Select Screen
                                            ↑↓     Select Item
                                            +-     Change Option
```
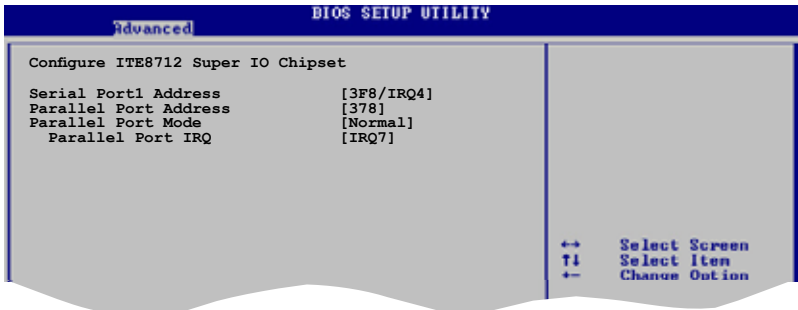
Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address. Configuration options:
[Disabled] [3F8/IRQ4][2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.
Configuration options: [Disabled] [378] [278] [3BC]

Parallel Port Mode [Normal]

Allows you to select the Parallel Port mode.
Configuration options: [Normal] [EPP] [ECP] [EPP+ECP]

> *ECP Mode DMA Channel [DMA3]*
> Appears only when the Parallel Port Mode is set to [ECP]. This item
> allows you to set the Parallel Port ECP DMA.
> Configuration options: [DMA0] [DMA1] [DMA3]

> *Parallel Port IRQ [IRQ7]*
> Configuration options: [IRQ5] [IRQ7]

2.4.4 PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.

⚠️ Take caution when changing the settings of the PCI PnP menu items. Incorrect field values can cause the system to malfunction.

```
                          BIOS SETUP UTILITY
 Advanced

 Advanced PCI/PnP Settings

 WARNING: Setting wrong values in below sections
          may cause system to malfunction.

 Plug And Play O/S              [No]
 PCI Latency Timer              [64]
 Allocate IRQ to PCI VGA        [Yes]
 Palette Snooping               [Disabled]

 IRQ-3  assigned to             [PCI Device]            ←→   Select Screen
 IRQ-4  assigned to             [PCI Device]            ↑↓   Select Item
 IRQ-5  assigned to             [PCI Device]            +-   Change Option
 IRQ-7  assigned to             [PCI Device]            F1   General Help
 IRQ-9  assigned to             [PCI Device]            F10  Save and Exit
 IRQ-10 assigned to             [PCI Device]            ESC  Exit
 IRQ-11 assigned to             [PCI Device]
 IRQ-14 assigned to             [PCI Device]
 IRQ-15 assigned to             [PCI Device]

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```

Plug and Play O/S [No]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. Configuration options: [No] [Yes]

PCI Latency Timer [64]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA [Yes]

When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested. Configuration options: [No] [Yes]

Palette Snooping [Disabled]

When set to [Enabled], the pallete snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

IRQ-xx assigned to [PCI Device]

When set to [PCI Device], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [PCI Device] [Reserved]

2.4.5 USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options.

```
                    Advanced

   USB Configuration

   Module Version - 2.24.0-11.4

   USB Devices Enabled:
             None

   USB 1.1 Controller            [Enabled]
   USB 2.0 Controller            [Enabled]
   Legacy USB Support            [Enabled]
   USB 2.0 Controller Mode       [HiSpeed]

                                              ↔    Select Screen
```
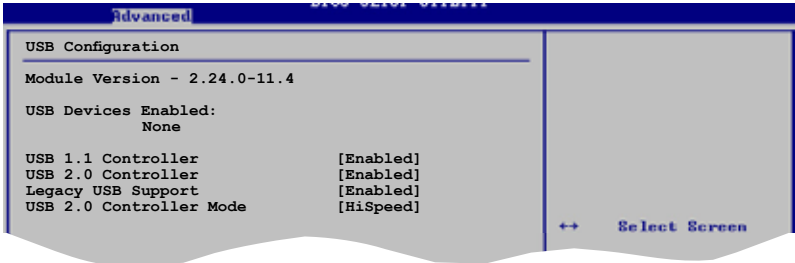
The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.

USB 1.1 Controller [Enabled]

Allows you to enable or disable the USB 1.1 Controller. Configuration options: [Enabled] [Disabled]

USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 Controller. Configuration options: [Enabled] [Disabled]

Legacy USB Support [Enabled]

Allows you to enable or disable support for USB devices on legacy operating systems (OS). Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.
Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [HiSpeed]

Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [HiSpeed] [Full Speed]

2.4.6   Jumperfree Configuration

```
                         BIOS SETUP UTILITY
  Advanced

  Configure System Frequency/Voltage


  AI Overclocking              [Auto]
  Chipset Voltage              [Auto]
  Memory Voltage               [Auto]
```
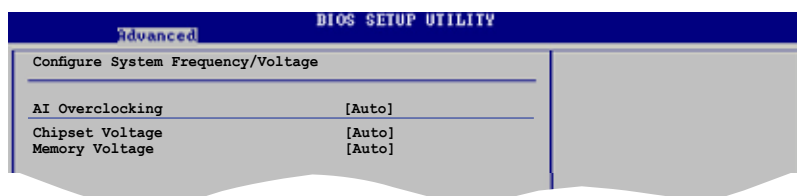
AI Overclocking [Auto]

Allows selection of CPU frequency and auto adjustment of relevant parameters. Frequencies higher than CPU manufacturer recommends are not guaranteed to be stable. If the system becomes unstable, return to the default. Configuration options: [Manual] [Standard]

Chipset Voltage [Auto]

Allows selection of the chipset voltage. The configuration options vary depending on the CPU installed.
Configuration options: [Auto] [1.2V] [1.3V]

Memory Voltage [Auto]

Allows you to select the memory voltage or set it to auto for safe mode. Configuration options: [Auto] [1.850V] [1.900V] [1.950V] [2.000V]

The following items appear only when the AI Tuning item is set to [Manual].

CPU Frequency [200]

Displays the frequency sent by the clock generator to the system bus and PCI bus. The value of this item is auto-detected by the BIOS. Use the <+> and <-> keys to adjust the CPU frequency. You can also type the desired CPU frequency using the numeric keypad. The values range from 200 to 230. Refer to the table below for the correct Front Side Bus and CPU

FSB/CPU External Frequency Synchronization

Front Side Bus	CPU External Frequency
FSB 1066	266 MHz
FSB 800	200 MHz
FSB 533	133 MHz

CPU Frequency [200]

Displays the frequency sent by the clock generator to the system bus and PCI bus. The value of this item is auto-detected by the BIOS. Use the <+> and <-> keys to adjust the CPU frequency. You can also type the desired CPU frequency using the numeric keypad. The values range from 200 to 230. Refer to the table below for the correct Front Side Bus and CPU External Frequency settings.

PCI Express Frequency [Auto]

Allows you to select PCI Express frequency.
Configuration options: [Auto] [90] [91] [92] [93]... [150]

Spread Spectrum [Enabled]

Allows you to enable or disable the clock generator spread spectrum.
Configuration options: [Disabled] [Enabled]

2.5   Power menu

The Power menu items allow you to change the settings for the Advanced Power Management (APM). Select an item then press <Enter> to display the configuration options.

```
                          BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Tools    Exit

  Suspend Mode                  [Auto]
  Repost Video on S3 Resume     [No]
  ACPI Support                  [ACPI v1.0]
  ACPI APIC Support             [Enabled]

  ▶  APM Configuration
  ▶  Hardware Monitor
```
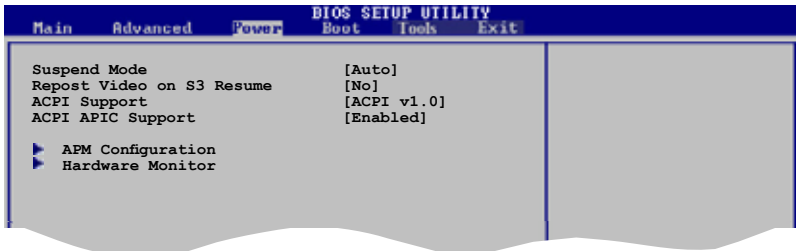
2.5.1   Suspend Mode [Auto]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend.
Configuration options: [S1 (POS) Only] [S3 only] [Auto]

2.5.2   Repost Video on S3 Resume [No]

Allows you to determines whether to invoke VGA BIOS POST on S3/STR resume. Configuration options: [No] [Yes]

2.5.3   ACPI Support [ACPI v1.0]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications.
Configuration options: [ACPI v1.0] [ACPI v2.0] [ACPI v3.0]

2.5.4   ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Application-Specific Integrated Circuit (ASIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

2.5.5 APM Configuration

```
                          BIOS SETUP UTILITY
                       Power

  APM Configuration

  Restore on AC Power Loss        [Power Off]
  Power On By RTC Alarm           [Disabled]
  Power On By External Modems     [Disabled]
  Power On By PCI Device          [Disabled]
  Power On By PCIE Device         [Disabled]
  Power On By PS/2 Keyboard       [Disabled]
  Power On By PS/2 Mouse          [Disabled]
```
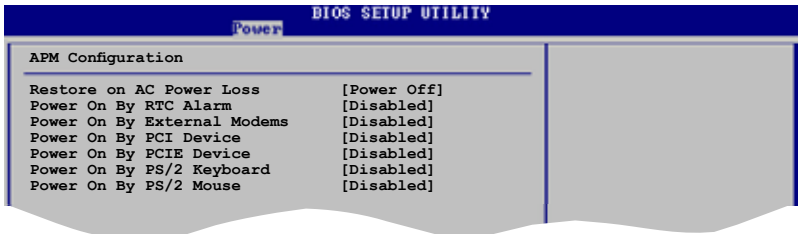
Restore on AC Power Loss [Power Off]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss. When set to Last State, the system goes into either off or on state, whatever the system state was before the AC power loss. Configuration options: [Power Off] [Power On] [Last State]

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values. Configuration options: [Disabled] [Enabled]

Power On By External Modems [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. Configuration options: [Disabled] [Enabled]

> The computer cannot receive or transmit data until the computer and applications are fully running. Thus, connection cannot be made on the first try. Turning an external modem off and then back on while the computer is off causes an initialization string that turns the system power on.

Power On By PCI Devices [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]
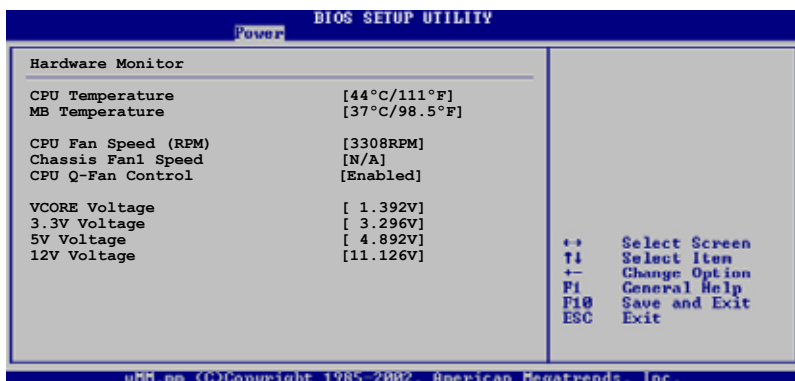
Power On By PCIE Devices [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCIE LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By PS/2 Keyboard [Disabled]

Allows you to use specific keys on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Space Bar] [Ctrl-Esc] [Power Key]

2.5.6   Hardware Monitor

```
                        BIOS SETUP UTILITY
                  Power

   Hardware Monitor

   CPU Temperature                 [44°C/111°F]
   MB Temperature                  [37°C/98.5°F]

   CPU Fan Speed (RPM)             [3308RPM]
   Chassis Fan1 Speed              [N/A]
   CPU Q-Fan Control               [Enabled]

   VCORE Voltage                   [ 1.392V]
   3.3V Voltage                    [ 3.296V]      ↔     Select Screen
   5V Voltage                      [ 4.892V]      ↑↓    Select Item
   12V Voltage                     [11.126V]      +-    Change Option
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

              vMM.nn (C)Copyright 1985-2002, American Megatrends, Inc.
```

CPU Temperature [xxxºC/xxxºF]
MB Temperature [xxxºC/xxxºF]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select Ignored if you do not wish to display the detected temperatures.

CPU Fan Speed (RPM) [xxxxRPM] or [N/A] or [Ignored]

The onboard hardware monitor automatically detects and displays the CPU fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A. Select Ignored if you do not wish to display the detected speed.

Chassis Fan1 Speed [xxxxRPM] or [N/A] or [Ignored]

The onboard hardware monitor automatically detects and displays the chassis fan speed in rotations per minute (RPM). If the fan is not connected to the chassis, the specific field shows N/A. Select Ignored if you do not wish to display the detected speed.

CPU Q-Fan Control [Disabled]

Allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. Configuration options: [Disabled] [Enabled]

> The **CPU Fan Profile Mode** item appears when you enable the **CPU Q-Fan Control** feature.

CPU Fan Profile Mode [Optimal]

Allows you to set the appropriate CPU fan performance level. When set to [Optimal], the CPU fan speed automatically adjusts depending on the CPU temperature. Set this item to [Silent Mode] for silent CPU fan operation or [Performance Mode] to achieve the maximum CPU fan speed. Configuration options: [Optimal] [Silent Mode] [Performance Mode]

VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.
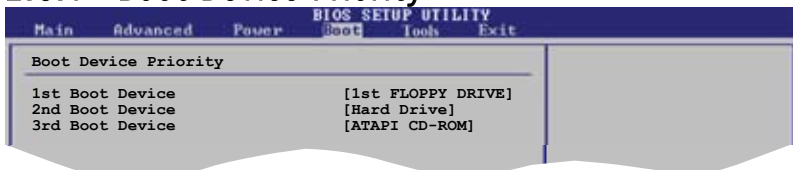
Fan Control [Disabled]

Allows you to enable or disable the Fan control. Configuration options: [Disabled] [Enabled]

2.6 Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the sub-menu.
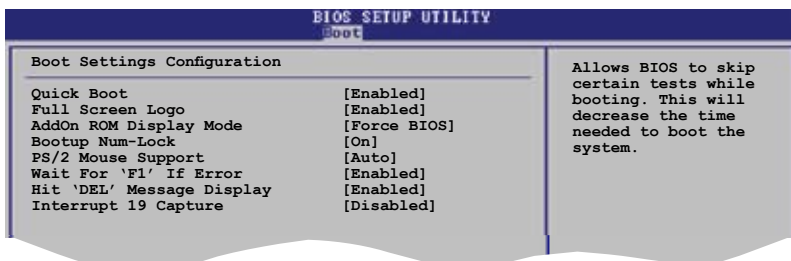

2.6.1 Boot Device Priority

1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. Configuration options:

2.6.2 Boot Settings Configuration

```
                    BIOS SETUP UTILITY
                        Boot

  Boot Settings Configuration              Allows BIOS to skip
                                           certain tests while
  Quick Boot                 [Enabled]     booting. This will
  Full Screen Logo           [Enabled]     decrease the time
  AddOn ROM Display Mode      [Force BIOS]  needed to boot the
  Bootup Num-Lock            [On]          system.
  PS/2 Mouse Support         [Auto]
  Wait For 'F1' If Error     [Enabled]
  Hit 'DEL' Message Display  [Enabled]
  Interrupt 19 Capture       [Disabled]
```

Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

This allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

> Set this item to [Enabled] to use the ASUS MyLogo2™ feature.

Add On ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

PS/2 Mouse Support [Auto]

Allows you to enable or disable support for PS/2 mouse.
Configuration options: [Disabled] [Enabled] [Auto]

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]
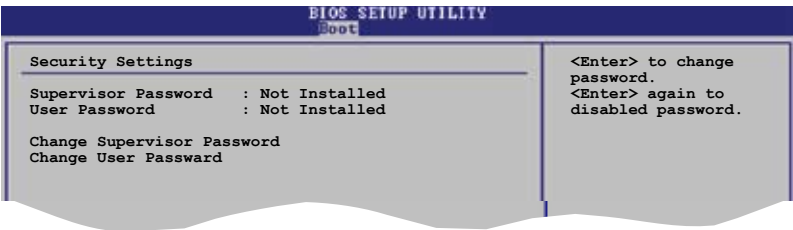
Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

2.6.3   Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.

```
                        BIOS SETUP UTILITY
                          Boot

   Security Settings                        <Enter> to change
                                            password.
   Supervisor Password    : Not Installed   <Enter> again to
   User Password          : Not Installed   disabled password.

   Change Supervisor Password
   Change User Password
```

Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default Not Installed. After you set a password, this item shows Installed.

To set a Supervisor Password:

1.   Select the Change Supervisor Password item and press <Enter>.
2.   From the password box, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.   Confirm the password when prompted.

The message "Password Installed" appears after you successfully set your password.

To change the supervisor password, follow the same steps as in setting a user password.

To clear the supervisor password, select the Change Supervisor Password then press <Enter>. The message "Password Uninstalled" appears.

If you forget your BIOS password, you can clear clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "2.6 Jumpers" for information on how to erase the RTC RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.

```
                          BIOS SETUP UTILITY
                              Boot

   Security Settings

   Supervisor Password   : Not Installed
   User Password         : Not Installed

   Change Supervisor Password
   User Access Level              [Full Access]
   Change User Password
   Clear User Password
   Password Check                 [Setup]
```

User Access Level [Full Access]

This item allows you to select the access restriction to the Setup items. Configuration options: [No Access] [View Only] [Limited] [Full Access]

No Access prevents user access to the Setup utility.

View Only allows access but does not allow change to any field.

Limited allows changes only to selected fields, such as Date and Time.

Full Access allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen shows the default Not Installed. After you set a password, this item shows Installed.

To set a User Password:

1.   Select the Change User Password item and press <Enter>.
2.   On the password box that appears, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.   Confirm the password when prompted.

The message "Password Installed" appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item to clear the user password.

Password Check [Setup]

When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system.
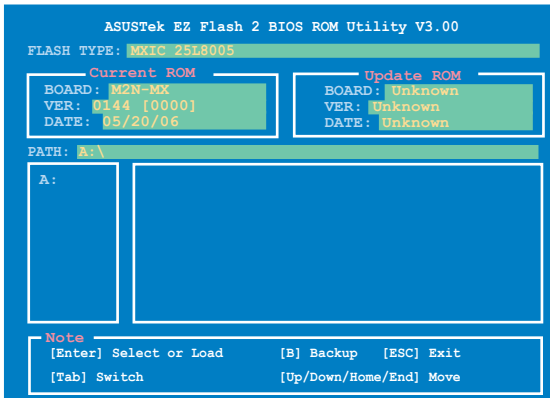Configuration options: [Setup] [Always]

2.7 Tools menu

2.7.1 ASUS EZ Flash 2

Allows you to run ASUS EZ Flash 2. When you press <Enter>, a confirmation message appears. Use the left/right arrow key to select between [Yes] or [No], then press <Enter> to confirm your choice. Please see page 4-2, section 4.1.2 for details.

2.8 Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.

```
                        BIOS SETUP UTILITY
 Main    Advanced    Power    Boot    Tools   Exit

 Exit Options                              Exit system setup
                                           after saving the
 Exit & Save Changes                       changes.
 Exit & Discard Changes
 Discard Changes                           F10 key can be used
                                           for this operation.
 Load Setup Defaults
```

Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select **OK** to save changes and exit.

If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **OK** to discard any changes and load the previously saved values.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **OK** to load default values. Select **Exit & Save Changes** or make other changes before saving the values to the non-volatile RAM.

This chapter describes the contents
of the support CD that comes with
the motherboard package.

Software

support

3

3.1 Installing an operating system

This motherboard supports Windows® 2000/XP operating systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.

> • Motherboard settings and hardware options vary. Use the setup procedures presented in this chapter for reference only. Refer to your OS documentation for detailed information.
>
> • Make sure that you install Windows® 2000 Service Pack 4 or the Windows® XP Service Pack 1 or later versions before installing the drivers for better compatibility and system stability.
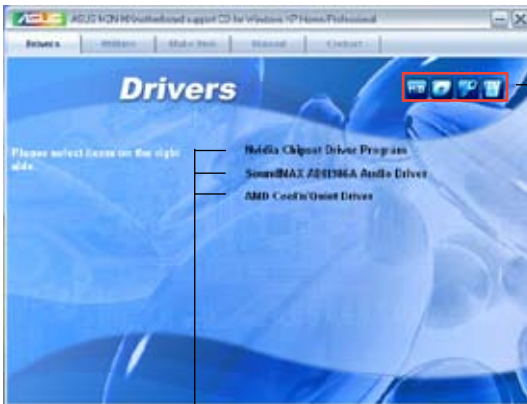
3.2 Support CD information

The support CD that came with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features.

> The contents of the support CD are subject to change at any time without notice. Visit the ASUS website(www.asus.com) for updates.

3.2.1 Running the support CD

Place the support CD to the optical drive. The CD automatically displays the Drivers menu if Autorun is enabled in your computer.

Click an icon to display support CD/motherboard information

Click an item to install

> If Autorun is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the CD.

3.2.2 Drivers menu

The drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

NVIDIA Chipset Driver Program

Installs the NVIDIA® nForce™ Chipset Driver program.

SoundMAX® ADI1986A Audio Driver

Executes the wizard to install the SoundMAX™ AD1986A audio driver and application.

AMD Cool 'n' Quiet Driver

Installs the AMD Cool 'n' Quiet driver.

> The screen display and drivers option may not be the same for different operating system versions.

3.2.3 Utilities menu

The Utilities menu shows the applications and other software that the motherboard supports.

ASUS PC Probe II

This smart utility monitors the fan speed, CPU temperature, and system voltages, and alerts you of any detected problems. This utility helps you keep your computer in healthy operating condition.

ASUS Update

The ASUS Update utility allows you to update the motherboard BIOS in a Windows® environment. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP).

ADOBE Acrobat Reader V7.0

The Adobe® Acrobat® Reader V7.0 is for opening, viewing, and printing documents in Portable Document Format (PDF).

Microsoft DirectX 9.0c

The Microsoft® DirectX® 9.0c is a multimedia technology that enhances computer graphics and sounds. DirectX® improves the multimedia features of your computer so you can enjoy watching TV and movies, capturing videos, or playing games on your computer.

Microsoft® Windows® XP Service Pack 2 already includes Microsoft® DirectX® 9.0c. If your system is Microsoft® Windows® XP Service Pack 2-embedded, skip Microsoft® DirectX® 9.0c installation.

Anti-Virus utility

The anti-virus utility scans, identifies, and removes computer viruses. View the online help for detailed information.

The screen display and utilities option may not be the same for different operating system versions.

ASUS Screen Saver

Installs the ASUS screen saver.

ASUS Cool 'n' Quiet Utility

This item installs the ASUS Cool 'n' Quiet utility.

3.2.4   Make Disk menu

The Make Disk menu allows you to make a RAID driver disk.

NVIDIA® 32bit SATA RAID Driver

Allows you to create an NVIDIA® Serial ATA (SATA) RAID driver disk for a 32-bit system.

3.2.5 Manual menu

The Manual menu contains a list of supplementary user manuals. Click an item to open the folder of the user manual.

Most user manual files are in Portable Document Format (PDF). Install the Adobe® Acrobat® Reader from the Utilities menu before opening a user manual file.

NVIDIA® SATA RAID User's Manual

Allows you to open the NVIDIA® SATA RAID user's manual.

3.2.6 ASUS Contact information

Click the Contact tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.
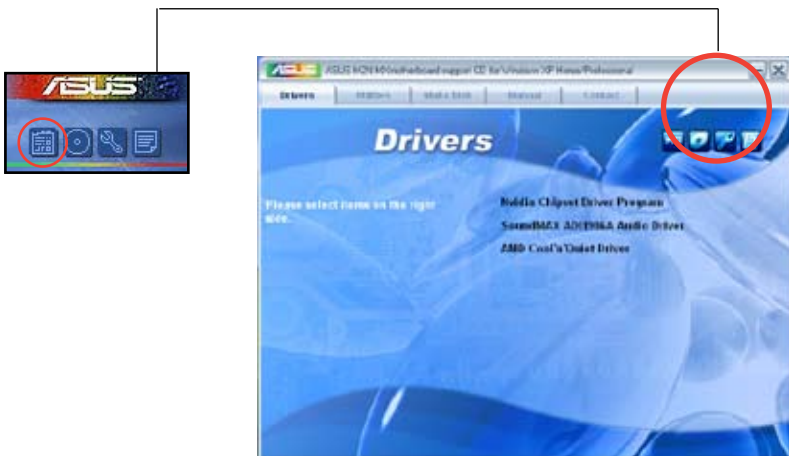

3.2.7 Other information

The icons on the top right corner of the screen give additional information on the motherboard and the contents of the support CD. Click an icon to display the specified information.

Motherboard Info

Displays the general specifications of the motherboard.

Browse this CD

Displays the support CD contents in graphical format.

Technical support Form

Displays the ASUS Technical Support Request Form that you have to fill out when requesting technical support.

Filelist

Displays the contents of the support CD and a brief description of each in text format.

3.3 Creating a RAID driver disk

A floppy disk with the RAID driver is required when installing Windows® 2000/XP operating system on a hard disk drive that is included in a RAID set.

To create a RAID driver disk:

1. Place the motherboard support CD into the CD-ROM drive.
2. Select Make Disk tab.
3. From the Make Disk menu, select the RAID driver disk you want to create or browse the contents of the support CD to locate the driver disk utility.

> For detailed descriptions on the NVIDIA® RAID configuration, refer to the "NVIDIA® MediaShield RAID User's Manual" found in your motherboard support CD .

4. Insert floppy disk to floppy disk drive.
5. Follow succeeding screen information to complete process.
6. Write-protect the floppy disk to avoid computer virus infection.

To install the RAID driver:

1. During the OS installation, the system prompts you to press the F6 key to install third-party SCSI or RAID driver.
2. Press <F6> then insert the floppy disk with RAID driver into the floppy disk drive.
3. Follow the succeeding screen instructions to complete the installation.

> Due to chipset limitation, the Serial ATA ports supported by the NVIDIA chipset doesn't support Serial Optical Disk Drives (Serial ODD) under DOS.